Docket No.: 1422-0519P
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Jun SAITO et al.

Application No.: 10/049,995 Confirmation No.: 4521

Filed: February 20, 2002 Art Unit: 1751

For: PROCESS FOR PREPARING HIGH-BULK DENSITY DETERGENT COMPOSITIONS Examiner: Boyer

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Appellants hereby appeal the Final Rejection of March 23, 2007 issued in the above application.

A Notice of Appeal was filed August 23, 2007. A petition for a one month extension of time to file this Appeal Brief is submitted with the accompanying Transmittal of Appeal Brief, together with the requisite appeal fees.

I. Real Party in Interest

The real party in interest for this appeal is Kao Corporation of Tokyo, Japan.

II. Related Appeals and Interferences

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. Status of Claims

A. There are 17 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 8 and 14
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-7, 9-13, 15-19
4. Claims allowed: None
5. Claims rejected: 1-7, 9-13, 15-19

C. Claims On Appeal

The claims on appeal are claims 1-7, 9-13 and 15-19

IV. Status of Amendments

An Amendment under 37 CFR 1.116 was filed June 21, 2007. In an Advisory Action dated July 13, 2007, the Examiner indicated that this amendment would be entered for purposes of appeal. The Examiner also indicated in the Advisory Action that the Amendment under 37 CFR 1.116 overcomes the rejection under 35 USC 112 (paragraph two).

V. Summary of Claimed Subject Matter

The invention on appeal is defined by independent claims 1 and 10, and dependent claims 2, 5, 6, 11, 12, 18 and 19, as described below:

The Invention of Independent Claim 1

In a first embodiment as recited in independent claim 1, the claimed invention is directed to a process for preparing a high-bulk density detergent composition having a bulk density of 650 g/L or more (page 2, lines 11-12; page 3, lines 12-13), comprising the steps of:

(A) blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for neutralizing the liquid acid precursor (page 3, lines 12-21), in a substantial absence of an alkali metal aluminosilicate (page 6, lines 5-16), and beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor (page 13, line 23 to page 14, line 3); and

(B) adding an inorganic powder (page 14, lines 17-25; page 15, lines 1-4) and a liquid binder to the neutralization mixture obtained in step (A) and mixing a resulting mixture (page 3, lines 19-22), wherein the inorganic powder is added to the neutralization mixture prior to the addition of the liquid binder to the neutralization mixture, and then the inorganic powder is added to the neutralization mixture after the addition of the liquid binder to the neutralization mixture (page 17, line 17 to page 18, line 3; page 18, line 25 to page 19, line 5; Example 1 at page 24, line 15 to page 26, line 25); and wherein the inorganic powder is added to the

neutralization mixture in step (B) in an amount of 8 to 50% by weight of the high-bulk density detergent composition (page 17, lines 9-16), which is the final product.

The Invention of Independent Claim 10

In a second embodiment, the claimed invention is directed to a process for preparing a high-bulk density detergent composition having a bulk density of 650 g/L or more (page 2, lines 11-12; page 3, line 25 to page 4, line 1), comprising the steps of:

(a) blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for neutralizing the liquid acid precursor (page 3, line 25 to page 4, line 6), in a substantial absence of an alkali metal aluminosilicate (page 6, lines 5-16), and beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor (page 13, line 23 to page 14, line 3); and

(b) adding an alkali metal aluminosilicate (page 14, lines 17-25; page 15, lines 1-9) and a liquid binder to the neutralization mixture obtained in step (a) and mixing a resulting mixture (page 4, lines 7-8), wherein the alkali metal aluminosilicate is added to the neutralization mixture prior to the addition of the liquid binder to the neutralization mixture, and then the alkali metal aluminosilicate is added to the neutralization mixture after the addition of the liquid binder to the neutralization mixture (page 17, line 17 to page 18, line 3; page 18, line 25 to page 19, line 5; Example 1 at page 24, line 15 to page 26, line 25); and wherein the alkali metal aluminosilicate is added to the neutralization mixture in step (B) in an amount of 8 to 50% by

weight of the high-bulk density detergent composition (page 17, lines 9-16), which is the final product.

The Invention of Dependent Claim 2

Dependent claim 2 is directed to an embodiment where the addition of the inorganic powder is initiated in step (B) at any time between a point when the liquid acid precursor of an anionic surfactant is added in an amount exceeding a weight ratio of 0.25 to the water-soluble, alkali inorganic substance and a point up to 5 minutes from termination of addition of an entire amount of the liquid acid precursor. (Page 14, lines 4-16)

The Invention of Dependent Claims 5 and 11

Dependent claims 5 and 11 are directed to an embodiment wherein the addition of the alkali metal aluminosilicate is initiated in step (B) at any time within 5 minutes from termination of addition of an entire amount of the liquid acid precursor of an anionic surfactant. (Page 14, lines 9-16)

The Invention of Dependent Claims 6 and 12

Dependent claims 6 and 12 are directed to an embodiment wherein the "substantial absence" of alkali metal aluminosilicate recited in step (A) is an amount of 5% by weight or less. (Page 6, lines 5-16)

The Invention of Dependent Claims 18 and 19

Dependent claims 18 and 19 are directed to an embodiment wherein multiple additions of the inorganic powder occur, with at least one of the multiple additions being prior to the addition of the liquid binder to the neutralization mixture and at least one of the multiple additions being after the addition of the liquid binder to the neutralization mixture. (Page 17, line 9 to page 19, line 14)

VI. Grounds of Rejection to be Reviewed on Appeal

The following Final Rejections are to be reviewed on appeal:

(1) Claims 1-7, 9-13 and 15-19 stand finally rejected under 35 USC 103(a) as being unpatentable over **Nitta et al** (EP 936,269).

(2) Claims 1-7, 9-13 and 15-19 stand finally rejected under 35 USC 103(a) as being unpatentable over **Mort et al** (U.S. Patent No. 6,794,354).

The Final Rejection under 35 USC 112 (paragraph two) is stated by the Examiner to be overcome by the Amendment under 37 CFR 1.116 filed June 21, 2007, entered for purposes of appeal.

VII. Argument

A. Issues Presented for Appeal

The issues presented for appeal are the following:

(1) Has a *prima facie* case of obviousness of claims 1-7, 9-13 and 15-19 been presented in view of the disclosure of Nitta et al?

(2) Has a *prima facie* case of obviousness of claims 1-7, 9-13 and 15-19 been presented in view of the disclosure of Mort et al?

B. Argument in Support of Patentability

1. The Present Invention and its Advantages

The present invention is directed to a process for preparing a high-bulk density detergent composition having a bulk density of 650 g/L or more, comprising the steps of:

(A) blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for neutralizing the liquid acid precursor, in a substantial absence of an alkali metal aluminosilicate, and beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor; and

(B) adding an inorganic powder (such as an alkali metal aluminosilicate) and a liquid binder to the neutralization mixture obtained in step (A) and mixing a resulting mixture, wherein the inorganic powder is added to the neutralization mixture prior to the addition of the liquid binder to the neutralization mixture, and then the inorganic powder is added to the neutralization

mixture after the addition of the liquid binder to the neutralization mixture; and wherein the inorganic powder is added to the neutralization mixture in step (B) in an amount of 8 to 50% by weight of the high-bulk density detergent composition, which is the final product.

Accordingly, appellants' invention is characterized by:

- In step (A): "*blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for neutralizing the liquid acid precursor,* ***in a substantial absence of an alkali metal aluminosilicate***",
- "*beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor*",
- in step (B) "*the inorganic powder is added to the neutralization mixture prior to the addition of the liquid binder to the neutralization mixture, and*

  then the inorganic powder is added to the neutralization mixture after the addition of the liquid binder to the neutralization mixture", and
  - in step (B) "*the inorganic powder is added to the neutralization mixture in step (B) in an amount of 8 to 50% by weight of the high-bulk density detergent composition, which is the final product*".

The above characterizations mean that in the claimed process, in step (A), neutralization of the liquid acid precursor *occurs in a substantial absence* (*e.g.*, 5 wt % or less) of an alkali metal aluminosilicate. They also mean that *step (B) begins* (is carried out) *after a point of*

initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor".

They further mean that in step (B) the inorganic powder is added to the neutralization mixture *both prior to and after* the addition of the liquid binder to the neutralization mixture, and the inorganic powder is added in step (B) in an amount of 8 to 50% by weight of the high-bulk density detergent composition, which is the final product.

Once a quantity of an inorganic powder such as an alkali metal aluminosilicate powder (*such as zeolite*) is added in the neutralization process, deterioration of the alkali metal aluminosilicate takes place, so that the detergency of the detergent composition is lowered. In addition, if the alkali metal aluminosilicate is added at once (*e.g.*, all at one time), an aggregation of the alkali metal aluminosilicate takes place. Thus, the present inventors have been able to unexpectedly solve previously encountered problems by the following:

- utilizing a substantial absence of an alkali metal aluminosilicate ***before*** a point of initiating formation of coarse grains in a neutralization mixture;
- adding the inorganic powder (*e.g.*, alkali metal aluminosilicate) ***after*** a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor; and
- adding the inorganic powder at several times (*i.e.*, not all at once).

Further, it is noted that by adding the inorganic powder in step (B) at a time *both prior to and after* the addition of the liquid binder to the neutralization mixture, there can be exhibited the effect of accelerating the disintegration effect of the neutralization mixture *(e.g., see page 14, lines 4-16 and page 19, lines 1-5 of the instant specification).*

According to the process of the present invention, a high-bulk density detergent composition comprising a granular mixture having a high-bulk density of 650 g/L or more can be obtained, wherein the detergent composition has both excellent detergent properties and a small particle size *(see page 20, lines 15-18 of the specification)*.

For the Board's information and understanding, the recited addition requirements set forth for the "*inorganic powder*" (*see claim 1, step (B)*) and "*alkali metal aluminosilicate*" (*see claim 10, step (b)*) (*and the corresponding dependent claims*) unexpectedly allow the particle size to advantageously be controlled in a manner that was not heretofore expected. Such a discovery and the advantageous particle size results that are associated therewith *are the product of much more than mere optimization*, and are in no way obvious to those of ordinary skill in the art based on the cited prior art.

Again, once a quantity of an alkali metal aluminosilicate (such as zeolite) is added in the neutralization process, a deterioration of the alkali metal aluminosilicate takes place, so that the detergency of the detergent composition being prepared is lowered. In addition, where the alkali metal aluminosilicate is added all at one time, an aggregation of the alkali metal aluminosilicate takes place.

Appellants have advantageously resolved these problems by utilizing a very specific neutralization process that takes place *in a substantial absence of* an alkali metal aluminosilicate (*e.g.*, 5 wt. % or less) *before* a point of initiation of formation of coarse grains in a neutralization mixture, and then, ***after*** a point of initiation of formation of coarse grains in the neutralization mixture, adding alkali metal aluminosilicate, *and by adding* the alkali metal aluminosilicate (inorganic powder) at several times, and not by being added all at once as recited in the claims.

The claimed invention is not rendered obvious by the cited prior art.

2. The Legal Standard Required to Establish a Prima Facie Case of Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet,* 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998).

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or

motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Supreme Court of the United States has recently held that the teaching, suggestion, motivation test is a valid test for obviousness, but one which cannot be too rigidly applied. See *KSR Int'l Co. v Teleflex Inc.*, No. 04-1350, slip op. at 11 (U.S. April 30, 2007).

The Supreme Court in *KSR Int'l Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. April 30, 2007) reaffirmed the Graham factors in the determination of obviousness under 35 U.S.C. § 103(a). The four factual inquiries under Graham are:

(a) determining the scope and contents of the prior art;

(b) ascertaining the differences between the prior art and the claims in issue;

(c) resolving the level of ordinary skill in the pertinent art; and

(d) evaluating evidence of secondary consideration.

Graham v. John Deere, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

The Court in *KSR Int'l Co. v. Teleflex, Inc., supra.*, did not totally reject the use of "teaching, suggestion, or motivation" as a factor in the obviousness analysis. Rather, the Court

recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a).

Even so, the Court in *KSR Int'l Co. v. Teleflex, Inc., ibid.*, rejected a rigid application of the "teaching, suggestion, or motivation" (TSM) test, which required a showing of some teaching, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the prior art elements in the manner claimed in the application or patent before holding the claimed subject matter to be obvious.

3. The Examiner Fails to Present a Prima Facie Case of Obviousness

Neither the cited Nitta et al nor the Mori et al references teach or suggest appellants' invention on appeal. As a result, no *prima facie* case of obviousness is established as to claims 1-7, 9-13 and 15-19 on appeal.

a. The Rejection of Claims 1-7, 9-13 and 15-19 under 35 USC 103(a) over Nitta et al

In support of the rejection over Nitta et al, the Examiner states as follows at pages 3-4 of the Final Rejection:

> "Nitta et al teach a process for preparing high density detergent compositions (see abstract). An example of such a process adds sodium carbonate and sodium tripolyphosphate to a mixer, followed by alkybenzene sulfonic acid such that the LAS is fully neutralized (note the absence of any aluminosilicate in this neutralization). Though not explicitly stated by the reference, the examiner maintains that as all of the components presently claimed are present in this example, and the process of this example has reached the same point as that claimed, that is, a neutralized liquid acid precursor, it is reasonable to

assume that coarse grains have begun to form. To restate, if coarse grains have formed for applicants' composition in present claim 1, and all components and process steps in the reference are identical, they must be forming in the composition of the reference as well. At this point, an aqueous solution of acrylic acid-maleic acid copolymer (meets the liquid binder limitation of the claims) and 4.2% zeolite with a particle size of 4 microns is added to the neutralization mixture, yielding a final composition of free-flowing granules with a bulk density of 760 g/L, wherein the composition comprises 12% zeolite (page 13, example 1 and page 19, table 1). Note that this process includes blowing a gas during the neutralization step (see page 23, table 5). Further note that substances generally employed in detergent compositions, such as aluminosilicates, may be added after the neutralization step and prior to the step of adding liquid components (page 8, paragraph 62). In this scenario, an aluminosilicate would be added after the neutralization, followed by binder, then followed by additional aluminosilicate, which is precisely what is presently claimed. To further support this scenario, recall that the final composition of the example above contains 12% zeolite. As only 4.2% zeolite is accounted for in the process description, additional zeolite must have been added at some point and the scenario set forth above is certainly a plausible, if not likely, pathway.

A person of ordinary skill in the art then, based on the teachings of the reference, would find it obvious to prepare a granular detergent by the scenario set forth above and so render the claim limitations obvious."

b. Distinctions Between the Claimed Invention and Nitta et al

Claims 1 and 10

The Nitta et al. reference does not teach or otherwise provide for each of the limitations recited in independent claims 1 and 10 (nor any of the claims that depend therefrom).

More particularly, Nitta et al. fails to provide any teaching regarding the precise timing of the addition of an "inorganic powder" (*e.g.*, see independent claim 1, step (B)),or an "alkali metal aluminosilicate" in steps (B) and (b) as claimed (*e.g.*, see independent claim 10), or that by such a recited addition process one can advantageously control particle size in the inventive methods and thereby arrive at a high-bulk density detergent composition having a bulk density of 650 g/L or more.

In Nitta et al, a zeolite is added in a surface-modifying step, where the formation of coarse grains no longer proceeds, for the purpose of improving flowability and anti-caking properties. Indeed, the 4.2% zeolite to which the Examiner makes reference is used in Nitta et al as a surface modifier for a different purpose and under different conditions as compared to the zeolite as claimed. At the point the 4.2% zeolite is added, the neutralization has already been completed and the formation of coarse grains no longer proceeds.

Nitta et al. also completely fails to see ***any*** importance in "*blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for neutralizing the liquid acid precursor, in a substantial absence of an alkali metal aluminosilicate, and beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor,*" as is recited in step (A) of independent claim 1,and step (a) of independent claim 10.

Nitta et al. further provides no teaching or motivation that would allow one skilled in the art to carry out the instantly claimed process including steps (A) and (B) as recited in pending claim 1, or steps (a) and (b) as recited in pending claim 10.

Directing the Board's attention to Table 6 of Nitta et al, the comparative data set forth in Table 6 can be divided into two types. The first type is that of Comparative Examples 18-19; the second type is that of Comparative Examples 11-17.

For the Board's convenience Table 6 of Nitta et al is reproduced below:

Table 6

Composition (parts by weight)	Comparative Examples								
	11	12	13	14	15	16	17	18	19
Powder Blending									
STPP	7.00	7.00	7.00	7.00	7.00	7.70	7.70	-	-
Sodium Carbonate	13.05	13.68	12.20	11.06	10.10	13.26	14.34	14.34	13.22
▶ Zeolite	-	-	-	-	-	-	-	7.70	7.70
Powdery Sodium Sulfate	-	-	0.90	-	-	-	-	-	-
Fluorescer	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Addition of Reaction Initiating Agent									
48 wt%-Aqueous NaOH Solution	0.51	-	0.51	0.61	0.66	0.37	0.27	0.27	-
Neutralization									
LAS	10.19	10.19	10.19	12.22	13.24	7.47	5.43	5.43	10.19
98 wt% Sulfuric Acid	-	-	-	-	-	-	-	-	-
85 wt% Phosphoric Acid	-	-	-	-	-	-	-	-	-
(Amount of Gas Blown) [L/min]	300	300	300	300	300	300	300	300	300
Fatty Acid	-	-	-	-	-	0.49	0.49	0.49	-
Nonionic Surfactant	-	-	-	-	-	1.40	2.45	2.45	-
Addition of Liquid Ingredients and Surface Modification									
Acrylic Acid-Maleic Acid Copolymer	0.44	0.44	0.44	0.44	0.44	-	-	-	0.44
▶ Zeolite	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20
After-Blending									
Enzyme	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Perfume	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Molar Ratio of Inorganic Acid/ Liquid Acid Precursor [mol/mol]	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04

More particularly, Comparative Examples 18-19 of Nitta et al are different from the instant invention in that a zeolite (inorganic powder) is added in the neutralization process in an amount of 7.7 parts by weight in Examples 18-19 (*or about 21-22 wt. %*) from the start/beginning of the process. As such, this leads to a high possibility that deterioration of a zeolite takes place in Comparative Examples 18-19 of Nitta et al, so that the detergency of the resulting detergent composition is lowered.

Comparative Examples 18-19 of Nitta et al utilize approximately the same process of manufacture and formulation as Comparative Example 1 of the present invention (see page 33, line 21 of the instant specification).

Likewise, the comparative data set forth for Comparative Examples 11-17 in Table 6 of Nitta et al shows that no zeolite is used in the neutralization process. Table 6 of Nitta et al also shows that 4.2 parts by weight (which is equal to 12.0 weight %)[1] of zeolite is added in the subsequent process steps, that is, the surface-modifying step of each of Comparative Examples 11-19.

As noted above, in Comparative Examples 11-19 of Nitta et al, 12.0 weight % of zeolite is added after its neutralizing step. However, the invention of Nitta et al and the instant invention are different in that a zeolite is added after the neutralization step in Example 1 of Nitta et al, whereas in the present invention, a zeolite is added after a point of initiation of formation of coarse grains of the neutralization mixture obtained during a course of a neutralization process in step (A). Thus, at best it appears that comparative Examples 11-17 of Nitta et al are similar to Comparative Example 2 of the present invention (*e.g., see pages 39-42 of the instant specification, particularly the results set forth in Table 5 at page 42*), wherein an inorganic powder was not added during the course of the neutralization process (*e.g., see page 39, lines 5-8*) , but was added subsequently (*see Table 4, at page 41*).

As such, it is submitted that the teachings and disclosure of Nitta et al. are incapable of rendering obvious the invention of claims 1 and 10.

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[1] "Parts by weight" means an actual weight like "g" or "kg". In order to convert "parts by weight" to "weight %", it is necessary that 4.20 parts by weight be divided by the total "parts by weight" of the other ingredients.

Dependent Claims 2, 5 and 11

Dependent claim 2 is directed to an embodiment where the addition of the inorganic powder is initiated in step (B) at any time between a point when the liquid acid precursor of an anionic surfactant is added in an amount exceeding a weight ratio of 0.25 to the water-soluble, alkali inorganic substance and a point up to 5 minutes from termination of addition of an entire amount of the liquid acid precursor.

Dependent claims 5 and 11 are directed to an embodiment wherein the addition of the alkali metal aluminosilicate (as the inorganic powder) is initiated in step (B) at any time within 5 minutes from termination of addition of an entire amount of the liquid acid precursor of an anionic surfactant.

Given the above-discussed deficiencies of Nitta et al, the invention of claims 2, 5 and 11 patentably distinguishes over the teachings of the reference. Indeed, Nitta et al is silent with respect to the limitations of these claims, and clearly fails to quantify the point at which the inorganic powder is added at step (B), as well as when such addition should cease.

Indeed, appellants' invention addresses the formation of coarse grains in a neutralization mixture by adding an inorganic powder such as an aluminosilicate during neutralization which, as a result, imparts the resulting detergent composition with high bulk density and excellent detergency.

Dependent Claims 6 and 12

Dependent claims 6 and 12 are directed to an embodiment wherein the substantial absence of alkali metal aluminosilicate recited in step (A) is an amount of 5% by weight or less.

Nitta et al is silent regarding the desirability of maintaining a low content of alkali metal aluminosilicate during step (A).

Dependent Claims 18 and 19

Dependent claims 18 and 19 are directed to an embodiment wherein multiple additions of the inorganic powder occur, with at least one of the multiple additions being prior to the addition of the liquid binder to the neutralization mixture and at least one of the multiple additions being after the addition of the liquid binder to the neutralization mixture.

Nitta et al is silent with regard to the requisite additions of the inorganic powder, and particularly, wherein at least one of the multiple additions occurs prior to the addition of the liquid binder, and at least one of the additions occurs after the addition of the liquid binder.

Indeed, the Examiner merely asserts at pages 4-5 of the Final Rejection that "the examiner maintains that adding components to a mixer as needed, that is, some powder followed by binder, and perhaps more powder or binder according to the needs of the formulator, rather than being a novel and therefore patentable process, is indeed commonly used and obvious to persons of ordinary skill in the art." The Examiner further states at page 5 that "One can readily imagine the formulator in the laboratory, wishing to make a high bulk density granule, trying various combinations of powder and binder to achieve a desired consistency."

The Examiner's position is without basis for the reason that it is based on mere supposition and speculation. Whether one of ordinary skill in the art wishes to make a high bulk density granule or not, one such person is not shown by the examiner to be inclined to undertake one type of experimentation over another. Particularly, the examiner has not demonstrated that

such person would be inclined to practice a method such as claimed by appellants. As a result, the Examiner's position must be found to be based on an improper hindsight analysis of the claimed invention.

c. The Rejection of Claims 1-7, 9-13 and 15-19 under 35 USC 103(a) over Mort et al

In support of the rejection over Mort et al, the Examiner states as follows at pages 5-6 of the Final Rejection:

> "Mort et al teach a continuous process for making a detergent composition (see abstract). This process begins with a zeolite-free neutralization step in a first mixer containing a liquid acid precursor and sodium carbonate as an alkaline inorganic material, followed by an intermediate step where optional liquid or particulate materials may be added, such as a zeolite free-flow aid. The 'second' agglomeration step adds a liquid binder to the free-flowing powder obtained from the previous steps (col. 6, line 25-col. 7, line 35) and as much as 10% additional detergent ingredients, such as aluminosilicates, which may be added as additional builders or coating agents, may be added in the second step (col. 13, lines 27-39). An example of such a process results in detergent agglomerates having a bulk density of 680 g/L and a particle size of 550 microns (col. 15, example 1).
>
> Based on this teaching, the following scenario can be easily envisioned, whereby after the neutralization step, a zeolite free flow aid is added in an intermediate step, after which a binder, followed by additional zeolite, is added in the second step. Such a scenario is precisely the method claimed by applicants.
>
> The examiner acknowledges that this scenario is merely one of many that could be envisioned by a reading of the reference. However, it is precisely this latitude with regard to process steps that the examiner notes time and again in the prior art and leads the examiner to the conclusion that there are many different ways to formulate an agglomerate and the person of skill in the art is aware that at times it may be advantageous to add all of the binder or particulate in a single batch, and at times it is better to add the ingredients in alternating steps, as presently claimed, depending on the needs of the formulator. Such processes are known in the art, as evidenced by the reference, and do not represent an unobvious difference over the prior art."

d. Distinctions Between the Claimed Invention and Mort et al

Claims 1 and 10

The Mort et al. reference does not teach or otherwise provide for each of the limitations recited in independent claims 1 and 10 (or any of the claims that depend therefrom).

More particularly, Mort et al. fails to provide any teaching regarding the timing of the addition of an "inorganic powder" (*e.g., see independent claim 1*), or of an "alkali metal aluminosilicate" (*e.g., see independent claim 10*) or that by such a timing one can advantageously control particle size in the inventive methods and thereby arrive at a high-bulk density detergent composition having a bulk density of 650 g/L or more.

Mort et al. also completely fails to see ***any*** importance in "*beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor,*" as is recited in step (A) of independent claim 1, or step (a) of independent claim 10.

Mort et al. also provides no teaching or motivation that would allow one skilled in the art to carry out the claimed process including steps (A) and (B) as recited in independent claim 1, or steps (a) and (b) as recited in independent claim 10.

Instead, Mort et al. at best simply teaches at column 7, lines 9-25 thereof, that in an optional intermediate step occurring after a dry neutralization step and before an agglomeration step, after transferring a neutralized mixture from a first mixer, one may optionally carry out a mixing step that can include a free-flowing powder (aid) such as zeolite. Importantly, the zeolite is used as a free flow aid in Mort et al, as opposed to means for preventing formation of coarse

grains as in appellants' invention. Such disclosure is clearly incapable of providing any motivation to those of ordinary skill in the art that would allow them to arrive at the claimed invention.

As such, it is submitted that the teachings and disclosure of Mort et al. are incapable of rendering obvious the invention of claims 1 and 10.

Dependent Claims 5 and 11

Dependent claims 5 and 11 are directed to an embodiment wherein the addition of the alkali metal aluminosilicate is initiated in step (B) at any time within 5 minutes from termination of addition of an entire amount of the liquid acid precursor of an anionic surfactant.

Given the above-discussed deficiencies of Mort et al, the invention of claims 5 and 11 patentably distinguishes over the teachings of the reference. Indeed, Mort et al is silent with respect to the limitations of these claims, and clearly fails to quantify the point at which the inorganic powder is added at step (b), as well as when such addition should cease.

Indeed, appellants' invention addresses the formation of coarse grains in a neutralization mixture by adding an inorganic powder such as an aluminosilicate during neutralization which, as a result, imparts the resulting detergent composition with high bulk density and excellent detergency.

Dependent Claims 18 and 19

Dependent claims 18 and 19 are directed to an embodiment wherein multiple additions of the inorganic powder occur, with at least one of the multiple additions being prior to the addition

of the liquid binder to the neutralization mixture and at least one of the multiple additions being after the addition of the liquid binder to the neutralization mixture.

Mort et al is silent with regard to the requisite additions of the inorganic powder, and particularly, wherein at least one of the multiple additions occurs prior to the addition of the liquid binder, and at least one of the additions occurs after the addition of the liquid binder.

Indeed, the Examiner merely asserts at page 6 of the Final Rejection that "it is precisely this latitude with regard to process steps that the examiner notes time and again in the prior art and leads the examiner to the conclusion that there are many different ways to formulate an agglomerate and the person of skill in the art is aware that at times it may be advantageous to add all of the binder or particulate in a single batch, and at times it is better to add the ingredients in alternating steps, as presently claimed, depending on the needs of the formulator".

The Examiner's position is without basis for the reason that it is based on mere supposition and speculation. Whether one of ordinary skill in the art wishes to make a high bulk density granule or not, one such person is not shown by the examiner to be inclined to undertake one type of experimentation over another. Particularly, the examiner has not demonstrated that such person would be inclined to practice a method such as claimed by appellants.

The Examiner has not shown on what basis one of such skill in the art would decide to use single batch addition, or multiple batch addition, as well as whether when having chosen multiple batch addition, whether such addition should occur before and/or after the addition of the binder. As a result, the Examiner's position must be found to be based on an improper hindsight analysis of the claimed invention.

In support of the above contentions of non-obviousness over Nitta et al. and Mort et al., the Board need only look at Example 1 of the instant invention (*see pages 24-26 of the instant specification*) and particularly the penultimate paragraph of Example 1 (*i.e., see page 24, lines 15-19 of the specification*), wherein it is disclosed as follows regarding the high-density detergent composition of Example 1, which was prepared in accordance with the instantly claimed inventive process.

> *The granules of the resulting detergent composition had an average particle size of 640 μm, a bulk density of 795 g/L, and a flowability of 7.1 seconds, whereby showing excellent powder properties. In addition, the granules had a relative ratio for the detergency rate of 0.998, whereby showing excellent detergency.*

In summary, both Nitta et al and Mort et al use an alkali aluminosilicate as surface modifiers after neutralization is carried out. By contrast, appellants use an alkali aluminosilicate to prevent formation of coarse grains in a neutralization mixture during the neutralization step, not during a surface modification step after neutralization. Further, the comparative example 2 of the instant specification is similar to the embodiments of the references in that an alkali metal aluminosilicate is not added during neutralization, but is instead added during a surface modification step after neutralization. Such results of comparative example 2 are shown to be inferior in relation to particle size in comparison to the remaining examples directed to the present invention.

As discussed above, appellants' invention addresses the formation of coarse grains in a neutralization mixture by the addition of an inorganic powder (such as an alkali aluminosilicate) during neutralization, resulting in the highly desirable detergent composition having a high bulk density and excellent detergent properties, which is the final product.

Because the cited art of Nitta et al. and Mort et al., do *not* provide any teaching which would motivate one of ordinary skill in the art to arrive at the invention as claimed in claims 1 and 10, it follows that neither reference is capable of supporting an obviousness rejection of any of the claims on appeal. This conclusion is buttressed or supported by the unexpected and advantageous properties that are possessed by the high-density detergents (*e.g., Example 1 in the instant specification*) that can be produced with the instant inventive processes.

In view of the above, the Examiner fails to present a *prima facie* case of obviousness.

VII. Conclusion

The Final Rejection of claims 1-7, 9-13 and 15-19 is improper as the Examiner fails to present a *prima facie* case of obviousness as to either the Nitta et al or Mort et al references. The Final Rejection should accordingly be reversed by the Honorable Board.

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Respectfully submitted,

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APPENDIX A

Claims Involved in the Appeal

1. A process for preparing a high-bulk density detergent composition having a bulk density of 650 g/L or more, comprising the steps of:

(A) blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for neutralizing the liquid acid precursor, in a substantial absence of an alkali metal aluminosilicate, and beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor; and

(B) adding an inorganic powder and a liquid binder to the neutralization mixture obtained in step (A) and mixing a resulting mixture, wherein the inorganic powder is added to the neutralization mixture prior to the addition of the liquid binder to the neutralization mixture, and then the inorganic powder is added to the neutralization mixture after the addition of the liquid binder to the neutralization mixture; and wherein the inorganic powder is added to the neutralization mixture in step (B) in an amount of 8 to 50% by weight of the high-bulk density detergent composition, which is the final product.

2. The process according to claim 1, wherein the addition of the inorganic powder is initiated in step (B) at any time between a point when the liquid acid precursor of an anionic surfactant is added in an amount exceeding a weight ratio of 0.25 to the water-soluble, alkali inorganic substance and a point up to 5 minutes from termination of addition of an entire amount of the liquid acid precursor.

3. The process according to claim 1 or 2, wherein the average particle size of the inorganic powder is 30 μm or less.

4. The process according to claim 1 or 2, wherein the inorganic powder is an alkali metal aluminosilicate.

5. The process according to claim 4, wherein the addition of the alkali metal aluminosilicate is initiated in step (B) at any time within 5 minutes from termination of addition of an entire amount of the liquid acid precursor of an anionic surfactant.

6. The process according to claim 1 or 2, wherein the substantial absence of alkali metal aluminosilicate recited in step (A) is an amount of 5% by weight or less.

7. The process according to claim 1 or 2, wherein the neutralization step is carried out in step (A) while blowing a gas.

9. The process according to claim 1 or 2, further comprising a surface-modifying step.

10. A process for preparing a high-bulk density detergent composition having a bulk density of 650 g/L or more, comprising the steps of:

(a) blending a liquid acid precursor of an anionic surfactant with a water-soluble, alkali inorganic substance in an amount equal to or exceeding an amount necessary for

neutralizing the liquid acid precursor, in a substantial absence of an alkali metal aluminosilicate, and beginning step (B) after a point of initiating formation of coarse grains in the neutralization mixture obtained during the course of neutralizing the liquid acid precursor; and

(b) adding an alkali metal aluminosilicate and a liquid binder to the neutralization mixture obtained in step (a) and mixing a resulting mixture, wherein the alkali metal aluminosilicate is added to the neutralization mixture prior to the addition of the liquid binder to the neutralization mixture, and then the alkali metal aluminosilicate is added to the neutralization mixture after the addition of the liquid binder to the neutralization mixture; and wherein the alkali metal aluminosilicate is added to the neutralization mixture in step (B) in an amount of 8 to 50% by weight of the high-bulk density detergent composition, which is the final product.

11. The process according to claim 10, wherein the addition of the alkali metal aluminosilicate is initiated in step (b) at any time within 5 minutes from termination of addition of an entire amount of the liquid acid precursor of an anionic surfactant.

12. The process according to claim 10 or 11, wherein the substantial absence of alkali metal aluminosilicate in step (a) is an amount of 5% by weight or less.

13. The process according to claim 10 or 11, wherein the neutralization step is carried out in step (a) while blowing a gas.

15. The process according to claim 10 or 11, further comprising a surface-modifying step.

16. The process according to claim 1, wherein the inorganic powder is a zeolite.

17. The process according to claim 10, wherein the alkali metal aluminosilicate is a zeolite.

18. The process according to claim 1, wherein multiple additions of the inorganic powder occur, with at least one of the multiple additions being prior to the addition of the liquid binder to the neutralization mixture and at least one of the multiple additions being after the addition of the liquid binder to the neutralization mixture.

19. The process according to claim 10, wherein multiple additions of the alkali metal aluminosilicate occur, with at least one of the multiple additions being prior to the addition of the liquid binder to the neutralization mixture and at least one of the multiple additions being after the addition of the liquid binder to the neutralization mixture.

EVIDENCE APPENDIX

No evidence pursuant to §§ 1.130, 1.131, or 1.132 is relied upon by appellants.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.